

### **REMARKS**

Applicants submit the instant Supplemental Amendment in light of just receiving the accompanying declaration. It is believed that the Declaration and Supplemental Amendment will be of benefit to the examination of this application. Entry of the Supplemental Amendment is respectfully requested.

Previously, the Examiner and Board objected to the use of “substantially transparent” as being indefinite. The claims, as amended, have removed the modifier “substantially” to state that the diffusing medium is transparent to neutrons. It is respectfully submitted that transparency is a term of art that is prevalent in the field to which the present invention pertains. Applicant’s definition set forth in the specification does not create an inconsistent definition, and, as demonstrated by the attached declaration of Yacine Kadi<sup>1</sup>, is readily understood by one of ordinary skill in the art upon reading the specification. [Kadi declaration, pars. 3-4]. Accordingly, one of ordinary skill in the art would readily understand what is meant by this claim limitation to be able to understand the scope of the limitation and practice the invention. Accordingly, it is respectfully submitted that the term “transparent” is definite and the rejection under 35 USC Section 112 be removed.

In furtherance of prior arguments addressing the “impurities” that the Examiner addressed, it is reiterated that the impurities refer to the material or isotopes to be activated and not the general content of the diffusing medium. As attested to by Yacine

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<sup>1</sup> As indicated in the Declaration, Yacine Kadi is an applied physicist at CERN.

Kadi, this disclosure is easily understood by one skilled in the art that has read the entire specification and has the structure of the activator 16 in mind. [Kadi declaration, par. 5]. This is apparent from the specification including from, but not limited to, the following passages:

- “If a small amount of impurity to be activated is added to the transparent medium, it will capture some neutrons.” Page 32, lines 10-11.
- “In such a region [i.e., the Activation Region] . . . are embedded the samples to be activated, for instance, inside narrow, thin tubes.” Page 53, lines 1-5.
- “. . . transmutation rates are largely independent of the chemical binding and isotopic composition of the materials inserted in the Activator.” Page 56, lines 13-15.
- “Therefore, one can imagine thin, sealed stainless tubes, similar to fuel pins except that they contain <sup>99</sup>Tc in dispersed form of metal wires or equivalent geometry and Iodine vapours at low pressure.” Page 81, lines 2-5.

[Kadi declaration, par. 5]

The presence of such impurities that are distributed or embedded in the diffusing medium does not change that the diffusing medium is transparent. As previously set forth, the present invention is directed to a transmuter that places a material in an activation region so that the material intentionally captures the neutrons and changes into a different species (e.g., a desired isotope). [See Kadi declaration, par. 6]. Accordingly, as expressly set forth in the specification, it is the materials or isotopes that are distributed or embedded within the diffusing medium that captures the neutrons, and not the diffusing medium. [Id.].

Accordingly, for these reasons and the reasons set forth in the amendment filed on November 20, 2006, it is respectfully requested that the claims should be allowed and proceed to issuance.

Additionally, to more clearly define the unique features of the present invention, new Claim 49 has been added. Applicant respectfully submits that new Claim 49 through is patentably distinct from all of the references of record.

Should the Examiner discover that there are remaining issues that could be resolved by an interview, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

Dated: May 2, 2007

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